

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3171104****Date: 22-05-2024****Subject Name: Biomedical Electronics****Time: 02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Discuss the electrode-electrolyte interface.	03
	(b) Explain Major Systems of the Body.	04
	(c) Explain design criteria and process for Biomedical Instrumentation commercially.	07
Q.2	(a) Discuss resting state potential.	03
	(b) Explain SNR and Noise Factor in detail.	04
	(c) Draw and explain generalized medical instrumentation system.	07
	OR	
	(c) Explain Noise reduction by Feedback and Noise reduction by signal averaging.	07
Q.3	(a) Explain Network equivalent circuit of nerve.	03
	(b) Operational Amplifier is best to design bioelectric amplifier. Justify	04
	(c) Floating electrodes are suitable to reduce motion artifact. Justify	07
	OR	
Q.3	(a) Compare Polarizable and Non polarizable electrodes.	03
	(b) Discuss the Electrode arrays with diagrams.	04
	(c) Explain internal Electrodes in Detail.	07
Q.4	(a) Discuss ECG signals with various points of voltage level.	03
	(b) What is ECG? Draw the waveform and mention its components.	04
	(c) Explain the standard 12 lead system for ECG measurements in detail.	07
	OR	
Q.4	(a) Define blood pressure and its types.	03
	(b) Enlist the typical EEG system faults.	04
	(c) Draw ECG Waveform and Analyze the same on the basis of the Segments and Intervals for abnormality detection.	07
Q.5	(a) Discuss Cranial X –Rays.	03
	(b) Explain Macro shock Hazards in detail	04
	(c) Differentiate between CT scan and X-Ray with appropriate applications of each.	07
	OR	
Q.5	(a) Explain the MRI system.	03
	(b) Enlist the applications of PET Scan Technology.	04
	(c) Describe the Physiological Effects of electricity on human body.	07
